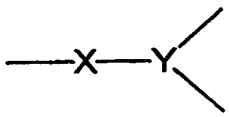
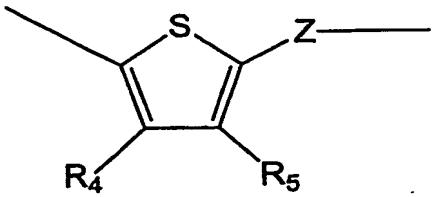
Claims

1. (amended) A dendritic polymer having a branching structure including repeating units each having a branch portion, each of said repeating units having a structure represented by formula (1), and containing a linear portion X formed of an optionally substituted divalent organic group and a branch portion Y formed of an optionally substituted trivalent organic group:



(1)

characterized in that the linear portion X is represented by formula (3):



(3)

wherein Z represents a single bond or an optionally substituted divalent organic group which is at least partially conjugated with thienylene; and each of R_4 and R_5 is selected from hydrogen, an alkyl group, and an alkoxy group; and the linear portion X is at least partially conjugated with the branch portion Y;

the portion Y included in the repeating unit and serving as an end of the branching structure is bonded to end moieties which are different from the repeating unit; wherein the end moieties have hole conductivity, electron

conductivity, or ion conductivity;

and in that the polymer exhibits semiconducting characteristics.

2. (amended) A dendritic polymer according to claim 1, wherein a conductive state is attained through application of electricity.

3. (amended) A dendritic polymer according to claim 1, wherein a conductive state is attained through application of photoexcitation.

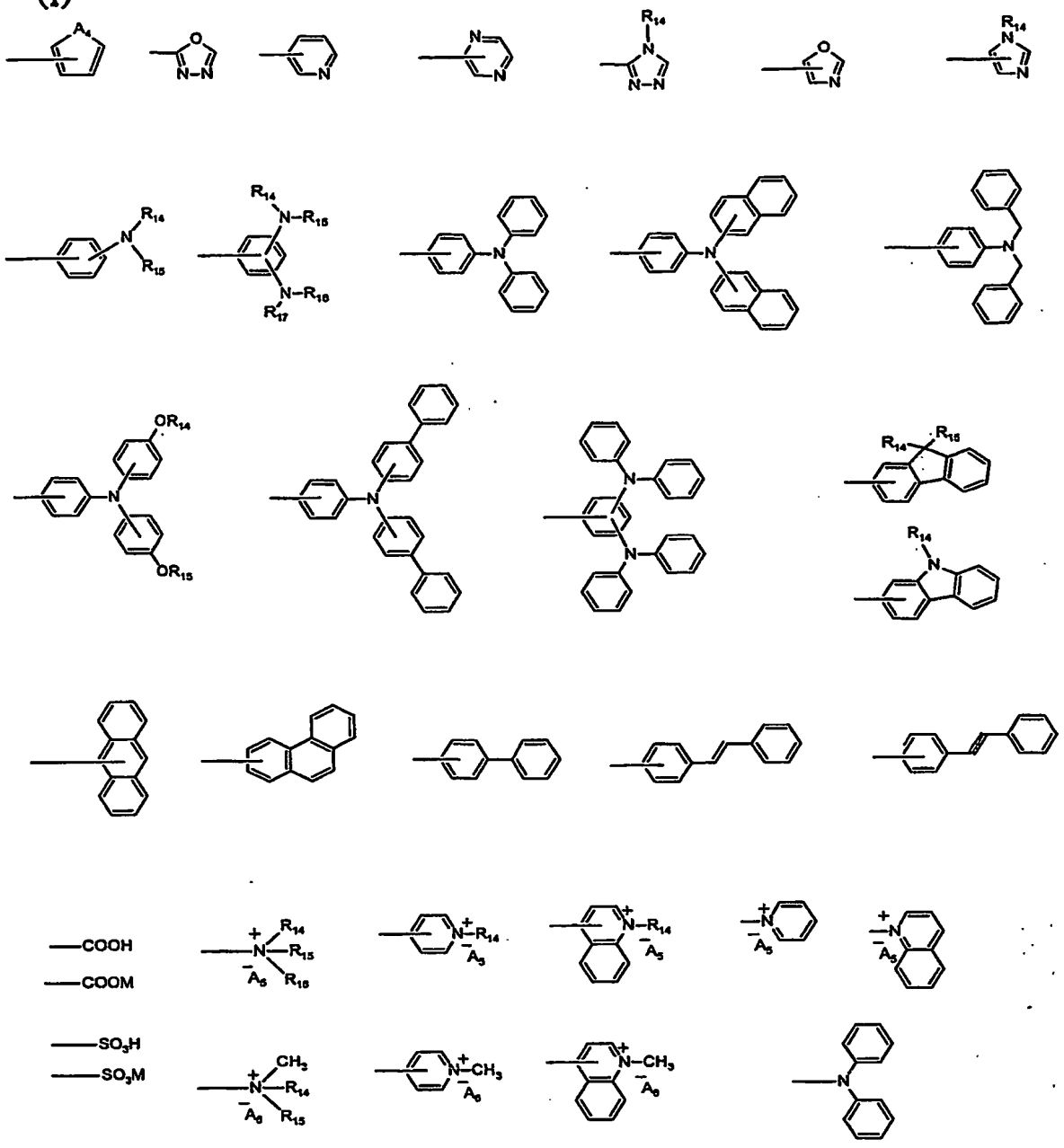
4. A dendritic polymer according to any one of claims 1 to 3, containing substantially no doping reagent.

5. A dendritic polymer according to any one of claims 1 to 4, wherein the portion X included in the repeating unit and serving as a starting point of the branching structure is further bonded to a center moiety serving as a core.

6. A dendritic polymer according to claim 5, wherein the core is a group having a valence of at least two to which at least two of the repeating unit can be directly bonded.

7. (amended) A dendritic polymer according to any one of claims 1 to 6, wherein the end moieties are selected from the moieties represented by the following formula (I) :

(I)



A_4 = O, S, N-R_{18}

R_{14} to R_{18} = a hydrogen atom or an alkyl group

A_5 = Cl, Br, I

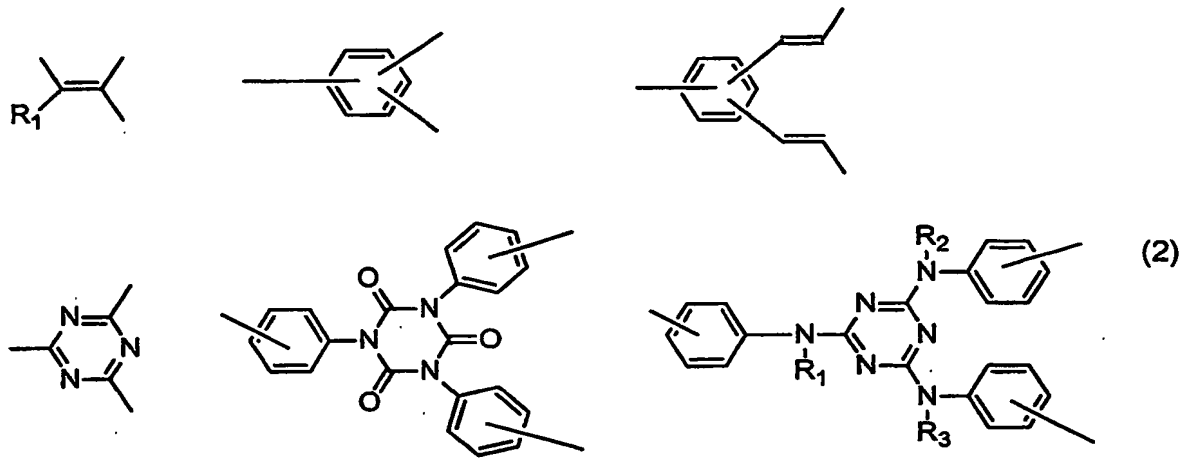
A_6 = CH_3SO_4

M = Li, Na, K, ammonium, monoalkylammonium, dialkylammonium,

trialkylammonium, or tetraalkylammonium.

8. A dendritic polymer according to any one of claims 1 to 7, wherein the branch portion Y includes, as a branching center, a chemical entity selected from among chain hydrocarbons (aliphatic hydrocarbons), cyclic hydrocarbons (including alicyclic compounds and aromatic compounds), and heterocyclic compounds (including aromatic heterocyclic compounds and non-aromatic heterocyclic compounds).

9. A dendritic polymer according to claim 8, wherein the branch portion Y is selected from among the moieties represented by formula (2):



(2)

wherein each of R_1, R_2, and R_3 represents a hydrogen atom or an alkyl group.

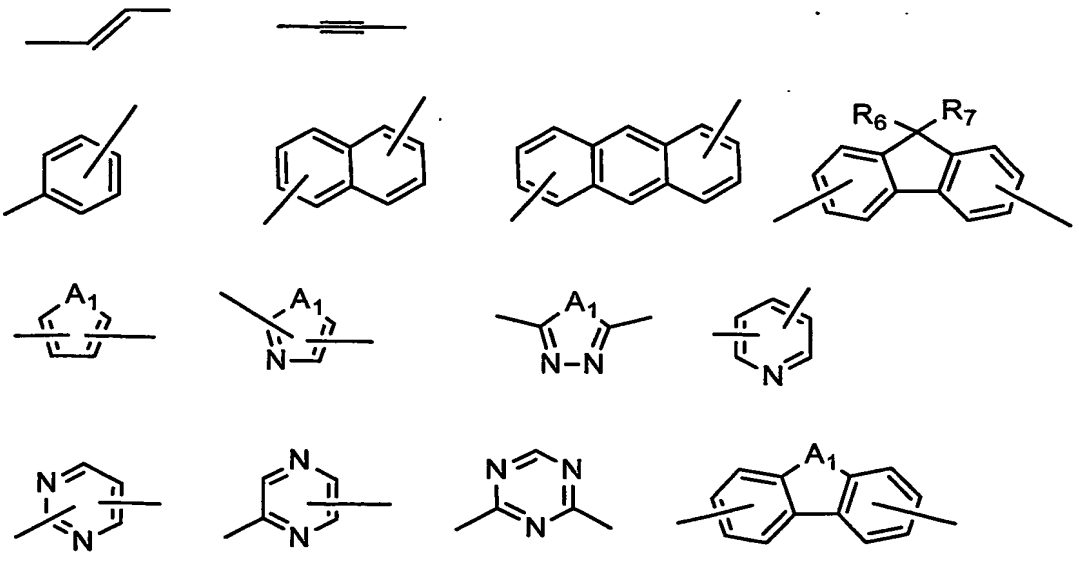
10. (canceled)

11. (amended) A dendritic polymer according to any one of claims 1 to 9, wherein the substituent Z is a substituent formed from a moiety selected from the group consisting of substituted or unsubstituted chain hydrocarbon (aliphatic hydrocarbon) moieties, substituted or unsubstituted cyclic hydrocarbon (including alicyclic compound and aromatic compound) moieties, and substituted or unsubstituted heterocyclic compound (including aromatic heterocyclic compound and non-aromatic heterocyclic compound) moieties; a substituent formed from a plurality of same moieties continuously linked together selected from said group; or a substituent formed from a plurality of different moieties continuously linked together selected from said group.

12. A dendritic polymer according to claim 11, wherein

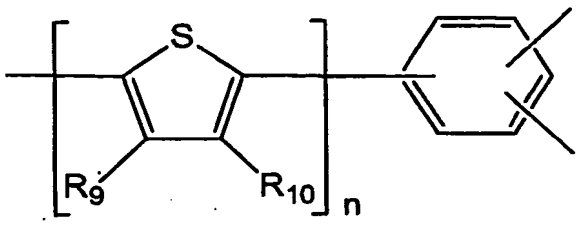
the substituent Z is a substituent formed from a moiety selected from the group consisting of substituted or unsubstituted unsaturated aliphatic hydrocarbon moieties and substituted or unsubstituted cyclic or heterocyclic aromatic compound moieties; a substituent formed from a plurality of same moieties continuously linked together selected from said group; or a substituent formed from a plurality of different moieties continuously linked together selected from said group.

13. A dendritic polymer according to claim 12, wherein the substituent Z is a substituent formed from a moiety selected from the group represented by formula (4); a substituent formed from a plurality of same moieties continuously linked together selected from said group; or a substituent formed from a plurality of different moieties continuously linked together selected from said group:



wherein A_1 represents O, S, or N-R_8, and each of R_6, R_7, and R_8 represents a hydrogen atom or an alkyl group.

14. A dendritic polymer according to any one of claims 1 to 9, wherein the repeating unit is represented by formula (5):



(5)

wherein each of R_9 and R_{10} is selected from hydrogen, an alkyl group, and an alkoxy group, and n represents an integer of 1 to 10.

15. (amended) A dendritic polymer according to any one of claims 1 to 9 and 11 to 14, which is a dendrimer.

16. (amended) An electronic device element characterized by employing a dendritic polymer as recited in any one claims 1 to 9 and 11 to 15.

17. An electronic device element according to claim 16, which is a charge-transporting device element.

18. An electronic device element according to claim 16, which is a switching transistor element.

19. An electronic device element according to claim 16, which is a light-emitting device element.

20. An electronic device element according to claim 16, which is a photoelectric conversion device element.